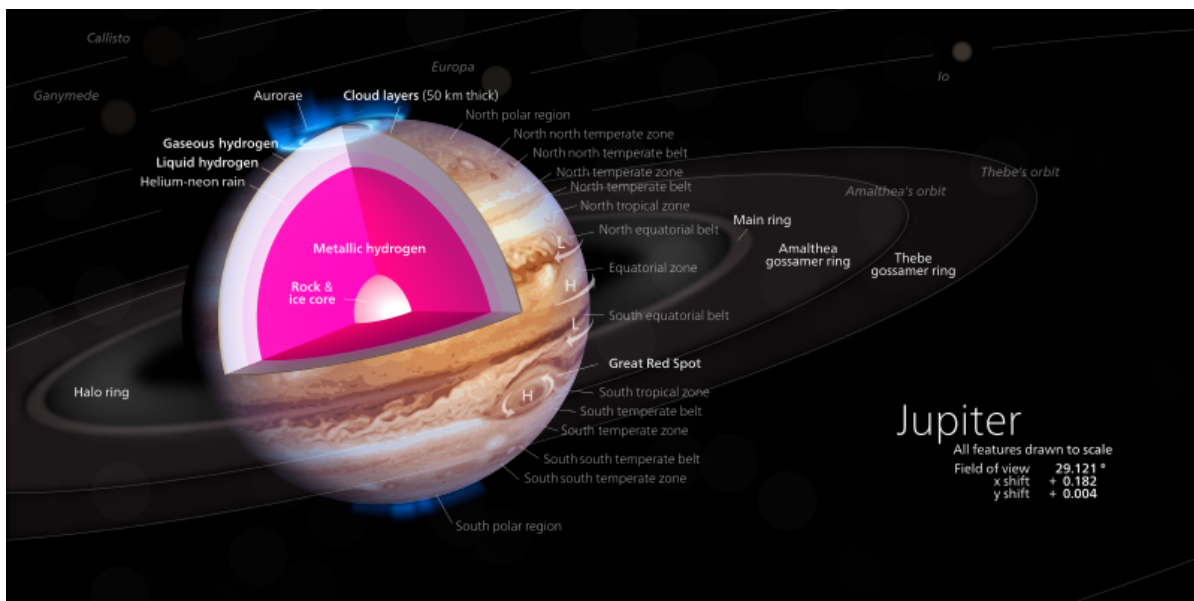


11.2: Jupiter's Interior



There is no direct information is available about Jupiter's interior, but scientist have a good understanding of the behavior and properties of its main components: hydrogen and helium. The interior of Jupiter consists of layers under high pressure and temperatures. Models suggest that at a depth of 100 km, the temperature reaches 300 K and a pressure of 10 atmospheres. Under those conditions, hydrogen exists as liquid molecular hydrogen. The molecular hydrogen layer continues to a depth of 20,000 km. At that depth, the temperature reaches 11,000 K and the pressure is 3×10^6 atmospheres. Below that level, the electrons in hydrogen become released from their atoms and freely move about. Under these conditions, hydrogen takes on the properties of metal, such as being a good conductor of heat and electricity. As a result, scientists refer to this state as **metallic hydrogen**. The metallic hydrogen layer rangers from a depth of 20,000 km to 60,000 km where the temperature reaches 18,000 K and the pressure is 4×10^7 atmospheres. Below the metallic hydrogen layer, Jupiter may have a solid core of approximately 10 Earth masses mostly made of hydrogen compounds, metals, and rock.

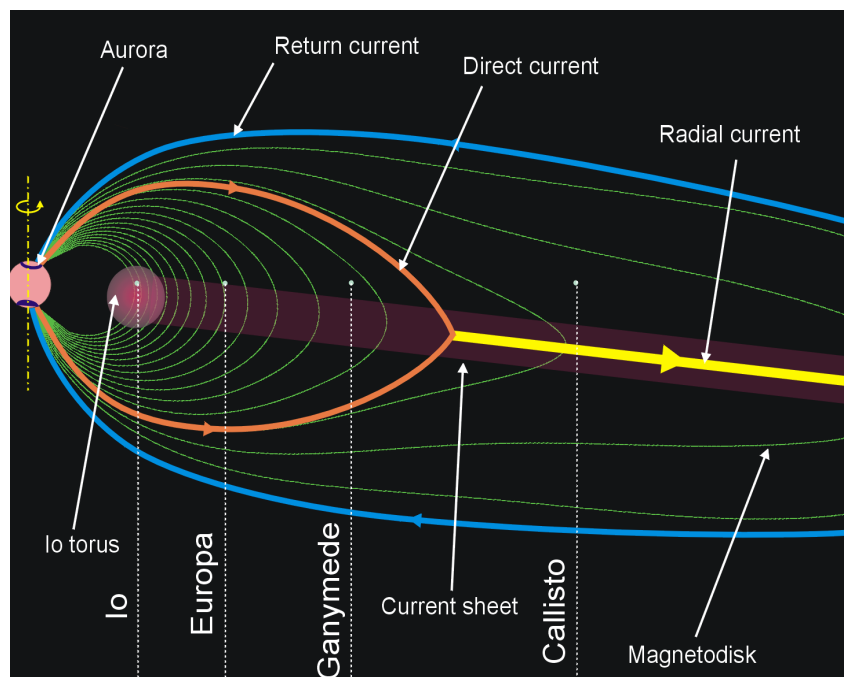


Jupiter and its interior

https://commons.wikimedia.org/wiki/File:er_diagram.svg

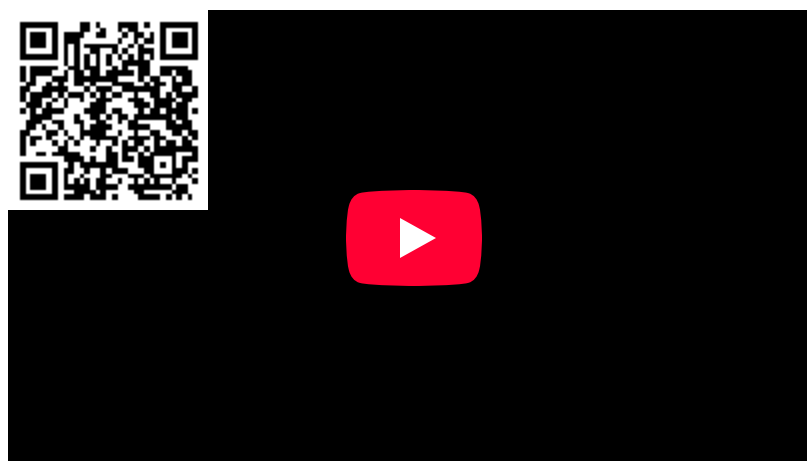
Jupiter radiates 1.5-2 times as much energy as it receives from the Sun. This energy probably comes from slow contraction of interior (releasing potential energy).

Jupiter has the strongest magnetosphere of all the planets. Its field has an intrinsic field strength 20,000 times that of Earth. As Jupiter magnetosphere interacts with the solar wind, the magnetic field lines are stretched out into a tail that can extend beyond the orbit of Saturn. Like Earth, Jupiter has aurorae that are produced by the interaction of solar wind particles with the magnetosphere.



Jupiter's Magnetosphere

https://commons.wikimedia.org/wiki/File:Jupiter_magnetosphere.png



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